

Density of Playdoh

Research Question

What is the relationship between the volume and mass of a ball of playdoh?

Independent variable: Mass of ball (m)

Dependent variable: Diameter of ball (d)

Controlled variables: Type of playdoh

Mathematical Model:

Density is defined as the mass per unit volume: $\rho = \frac{M}{V}$

But the volume of a sphere is given by the $V = \frac{4}{3} \pi r^3 = \frac{1}{6} \pi d^3$ equation

So $\rho = \frac{6M}{\pi d^3}$

giving: $d^3 = \frac{6M}{\pi \rho}$

Hypothesis:

If we graph the diameter cubed against the mass then we should get a directly proportional relationship with a gradient of $\frac{6}{\pi \rho}$ and an intercept of 0.

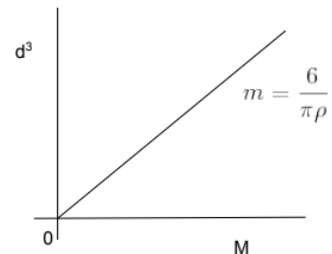


Table of Raw Data:

Table of Processed Data:

Graph of results:

Value of gradient with absolute uncertainty:

Value of density with absolute uncertainty: